WHAT IS CLAIMED IS:

1. A system for detecting radiation, comprising:

a cell comprising a medium having a plurality of states, the cell operable to:

receive a first laser drive field having a frequency approximately equivalent to a transition frequency between a first state and a second state of the plurality of states;

receive a second laser drive field having a frequency approximately equivalent to a transition frequency between the first state and a third state of the plurality of states;

receive an infrared field having a frequency approximately equivalent to a transition frequency between the third state and a fourth state of the plurality of states, the medium operable to have a transition between the second state and the third state substantially forbidden to support optimal coherence on the transition between the second state and the third state; and

upconvert the infrared field to generate a detectable field having a frequency approximately equivalent to a transition frequency between the second state and the fourth state of the plurality of states; and

a detector operable to detect the detectable field.

2. The system of Claim 1, wherein the cell is operable to continuously upconvert the infrared field to generate the detectable field.

3. The system of Claim 1, wherein:

an intensity of the first laser drive field is of the order of a saturation intensity of a transition between the first state and the second state; and

an intensity of the second laser drive field is of the order of a saturation intensity of a transition between the first state and the third state.

4. The system of Claim 1, wherein:

the first laser drive field is approximately detuned from a first resonance frequency of the medium; and

the second laser drive field is approximately detuned from a second resonance frequency of the medium.

5. The system of Claim 1, wherein:

a detuning of the first laser drive field is approximately equivalent to a linewidth associated with a transition from the first state to the second state; and

a detuning of the second laser drive field is approximately equivalent to a linewidth associated with a transition from the first state to the third state.

6. The system of Claim 1, wherein:

a nonlinear susceptibility of the medium at the frequency of the infrared field is approximately equal to a linear susceptibility of the medium at the frequency of the infrared field; and

a nonlinear susceptibility of the medium at the frequency of the detectable field is approximately equal to a linear susceptibility of the medium at the frequency of the detectable field.

7. The system of Claim 1, wherein an angle between a first propagation direction of the first laser drive field and a second propagation direction of the second laser drive field is less than two degrees.

8. The system of Claim 1, wherein the cell comprises a molecular vapor.

9. The system of Claim 1, wherein the cell comprises an atomic vapor.

10. A system for detecting radiation, comprising:

a cell comprising a semiconductive medium having a plurality of levels, the cell operable to:

receive a laser drive field having a frequency approximately equivalent to a transition frequency between a first level and a second level of the plurality of levels;

receive an infrared field having a frequency approximately equivalent to a transition frequency between the second level and a third level of the plurality of levels, the medium operable to have a transition between the first level and the second level partially forbidden to support an optimal coherence on the transition between the first level and the second level; and

upconvert the infrared field to generate a detectable field having a frequency approximately equivalent to a transition frequency between the first level and the third level; and

a detector operable to detect the detectable field.

11. The system of Claim 10, wherein the cell is operable to continuously upconvert the infrared field to generate the detectable field.

12. The system of Claim 10, wherein a photon energy of the laser drive field is less than a transition energy between the first level and the second level by approximately 10 to 20 meV.

13. The system of Claim 10, wherein:

the first level comprises a hole level;

the second level comprises a first electron level; and

the third level comprises a second electron level.

14. The system of Claim 10, wherein:

the first level comprises an electron level;

the second level comprises a first hole level; and

the third level comprises a second hole level.

15. The system of Claim 10, wherein the cell comprises a plurality of quantum dots.

16. The system of Claim 10, wherein the cell comprises a stack of approximately ten to twenty layers of quantum dots.

17. The system of Claim 10, wherein the cell comprises a plurality of quantum wells.

18. A method for detecting radiation, comprising:

receiving a first laser drive field at a cell comprising a medium having a plurality of states, the first laser drive field having a frequency approximately equivalent to a transition frequency between a first state and a second state of the plurality of states;

receiving a second laser drive field having a frequency approximately equivalent to a transition frequency between the first state and a third state of the plurality of states;

receiving an infrared field having a frequency approximately equivalent to a transition frequency between the third state and a fourth state of the plurality of states, the medium having a transition between the second state and the third state substantially forbidden to support optimal coherence on the transition between the second state and the third state;

generating, by upconverting the infrared field, a detectable field having a frequency approximately equivalent to a transition frequency between the second state and the fourth state; and

detecting the detectable field.

19. The method of Claim 18, further comprising generating the detectable field by continuously upconverting the infrared field.

20. The method of Claim 18, wherein:

an intensity of the first laser drive field is of the order of a saturation intensity of a transition between the first state and the second state; and

an intensity of the second laser drive field is of the order of the saturation intensity of a transition between the first state and the third state.

21. The method of Claim 18, further comprising:

approximately detuning the first laser drive field from a first resonance frequency of the medium; and

approximately detuning the second laser drive field from a second resonance frequency of the medium.

22. The method of Claim 18, further comprising:

detuning of the first laser drive field, the detuning being approximately equivalent to a linewidth associated with a transition from the first state to the second state; and

detuning of the second laser drive field, the detuning being approximately equivalent to a linewidth associated with a transition from the first state to the third state.

23. The method of Claim 18, wherein:

a nonlinear susceptibility of the medium at the frequency of the infrared field is approximately equal to a linear susceptibility of the medium at the frequency of the infrared field; and

a nonlinear susceptibility of the medium at the frequency of the detectable field is approximately equal to a linear susceptibility of the medium at the frequency of the detectable field.

24. The method of Claim 18, wherein an angle between a first propagation direction of the first laser

drive field and a second propagation direction of the second laser drive field is less than two degrees.

25. The method of Claim 18, wherein the cell comprises a molecular vapor.

26. The method of Claim 18, wherein the cell comprises an atomic vapor.

27. A method for detecting radiation, comprising:

receiving a laser drive field at a cell comprising a semiconductive medium having a plurality of levels, the laser drive field having a frequency approximately equivalent to a transition frequency between a first level and a second level of the plurality of levels;

receiving an infrared field having a frequency approximately equivalent to a transition frequency between the second level and a third level of the plurality of levels, the medium operable to have a transition between the first level and the second level partially forbidden to support an optimal coherence on the transition between the first level and the second level; and

upconverting the infrared field to generate a detectable field having a frequency approximately equivalent to a transition frequency between the first level and the third level; and

detecting the detectable field.

28. The method of Claim 27, further comprising continuously upconverting the infrared field to generate the detectable field.

29. The method of Claim 27, wherein a photon energy of the laser drive field is less than a transition energy between the first level and the second level by approximately 10 to 20 meV.

30. The method of Claim 27, wherein:
the first level comprises a hole level;
the second level comprises a first electron level; and
the third level comprises a second electron level.

31. The method of Claim 27, wherein:
the first level comprises an electron level;
the second level comprises a first hole level; and
the third level comprises a second hole level.

32. The method of Claim 27, wherein the cell comprises a plurality of quantum dots.

33. The method of Claim 27, wherein the cell comprises a stack of approximately ten to twenty layers of quantum dots.

34. The method of Claim 27, wherein the cell comprises a plurality of quantum wells.

35. A system for detecting radiation, comprising:

means for receiving a first laser drive field, a second laser drive field, and an infrared field and for generating a detectable field by upconverting the infrared field, the receiving and generating means having a plurality of states;

means for detecting the detectable field; and

wherein:

the first laser drive has a frequency approximately equivalent to a transition frequency between a first state and a second state of the plurality of states;

the second laser drive has a frequency approximately equivalent to a transition frequency between the first state and a third state of the plurality of states;

the infrared field has a frequency approximately equivalent to a transition frequency between the third state and a fourth state of the plurality of states;

the generated detectable field has a frequency approximately equivalent to a transition frequency between the second state and the fourth state; and

the medium has a transition between the second state and the third state substantially forbidden to support optimal coherence on the transition between the second state and the third state.

36. A system for detecting radiation, comprising:

a cell comprising a medium having a plurality of states, the cell operable to:

receive a first laser drive field having a frequency approximately equivalent to a transition frequency between a first state and a second state of the plurality of states, the first laser drive field having an intensity of the order of a saturation intensity of a transition between the first state and the second state, a detuning of the first laser drive field is approximately equivalent to a linewidth associated with the transition from the first state to the second state;

receive a second laser drive field having a frequency approximately equivalent to a transition frequency between the first state and a third state of the plurality of states, the second laser drive field having an intensity of the order of the saturation intensity of a transition between the first state and the third state, a detuning of the second laser drive field is approximately equivalent to a linewidth associated with the transition from the first state to the third state;

receive an infrared field having a frequency approximately equivalent to a transition frequency between the third state and a fourth state of the plurality of states, the medium operable to have a transition between the second state and the third state substantially forbidden to support optimal coherence on the transition between the second state and the third state, an angle between a first propagation direction of the first laser drive field and a second propagation direction of the second laser drive field being less than two degrees; and

continuously upconvert the infrared field to generate a detectable field having a frequency approximately equivalent to a transition frequency between the second state and the fourth state; and

a detector operable to detect the detectable field.